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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,685	12/01/2003	Donald C. Mayer	D486.	3413

7590 01/11/2005
Carole A. Mulchinski, M1/040
The Aerospace Corporation
2350 East El Segundo Boulevard
El Segundo, CA 90245

EXAMINER

VU, HUNG K

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/725,685

Applicant(s)

MAYER ET AL.

Examiner

Hung Vu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Beneking (PN 3,803,461, of record).

Beneking discloses, as shown in Figures 1 – 6, a MOSFET for receiving an applied voltage and a gate voltage, the MOSFET comprising,

a first terminal (4) in a semiconductor material

a gate terminal (G1,G3) receiving the gate voltage, the gate being disposed over a channel of the semiconductor material, the gate and channel being curved defined by a gate curvature, the gate being insulated from the semiconductor material, the channel having two channel ends, the two channel ends being nonparallel nonaligned channel ends, the curve of the gate and the channel are noninflecting,

an insulator (5) disposed between the gate and the semiconductor material, and

a second terminal (2,3) in the semiconductor material, the applied voltage extends between the first terminal and the second terminal, the gate voltage serving to control conduction between the first terminal and the second terminal in the presence of the gate voltage, the applied

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voltage serving to establish a diverging electric field extending from the first terminal through the channel to the second terminal, the MOSFET being a triode MOSFET.

With regard to claim 2, Beneking discloses the gate curvature is defined by a radius extending from a point inside the first terminal.

With regard to claim 3, Beneking discloses the gate curvature of the gate is defined by a radius extending from a point inside the first terminal, the gate curvature is less than a semicircle.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 – 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beneking (PN 3,803,461, of record).

Beneking discloses, as shown in Figures 1 – 6, a MOSFET for receiving an applied voltage and a gate voltage, the MOSFET comprising,

a source terminal (4) in a first type silicon (1),

a gate terminal (G1, G3) receiving the gate voltage, the gate being disposed over a channel of the first type silicon, the gate being insulated from the first type silicon, the channel

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having two channel ends, the two channel ends being nonparallel nonaligned channel ends, the curve of the gate and the channel are noninflecting,

an insulator (5) disposed between the gate and the first type silicon, and

a drain terminal (2,3) in the first type silicon, the applied voltage extends between the source terminal and the drain terminal, the gate voltage serving to control conduction between the source terminal and the drain terminal in the presence of the gate voltage, the applied voltage serving to establish a diverging electric field extending from the source terminal through the channel to the drain terminal.

Beneking does not disclose the first type silicon is an n-type silicon. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the silicon of Beneking as an n-type silicon depending on the desired application.

With regard to claim 8, Beneking discloses the curve of the gate is defined by a radius extending from a point inside the source terminal.

With regard to claim 9, Beneking discloses the gate curvature is defined by a radius extending from a point inside the source terminal, the gate curvature is less than a semicircle.

With regard to claims 4, 5, 10 and 16-17, Beneking does not disclose the shape of the gate curvature is a quarter circle or an eighth circle. However, the shape differences are considered obvious design choices and are not patentable unless unobvious or unexpected results are obtained from these changes. It appears that these changes produce no functional differences

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and therefore would have been obvious. Note *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Circ. 1990).

With regard to claims 12 – 15, Beneking discloses the MOSFET further comprising,

a source connector (S),

a source contact (bottom of S) in the source connector for connecting the source connector to the source terminal,

a drain connector (D1, D2), and

a drain contact(s) (a plurality of portions of bottom of D1 and D2) in the drain connector for connecting the drain connector to the drain terminal, the applied voltage being applied between the source connector and the drain connector.

With regard to claims 7, 11, 14 and 15, Beneking does not disclose the MOSFET further comprising a p-type silicon well. However, at Figure 4, Beneking discloses forming a p-type silicon well (p+). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the MOSFET of Beneking further comprising a p-type silicon well in order to prevent uncontrolled edge currents between the source and the drain electrodes.

Response to Arguments

3. Applicant's arguments filed 10/25/04 have been fully considered but they are not persuasive.

It is argued, at pages 8 and 9 of the Remarks, that Beneking does not disclose the MOSFET being a triode MOSFET. This argument is not convincing because Beneking discloses, as shown in Figures 5 and 6, the MOSFET being a triode MOSFET (S,G₃,D₂). Therefore, Applicants' claims 1 and 6 do not distinguish over the Beneking reference.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung K. Vu whose telephone number is (571) 272-1666. The examiner can normally be reached on Mon-Thurs 6:00-3:30, alternate Friday 7:00-3:30, Eastern Time.

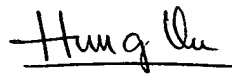
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272-1732. The Central Fax Number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Vu

January 6, 2005

A handwritten signature in cursive script, appearing to read "Hung Vu", is written over a horizontal line.

Hung Vu

Primary Examiner